

## REMARKS

Claims 1 and 17 have been cancelled, Claims 2-16 and 18-24 have been amended, and new Claims 25-28 have been added. Claims 2-16 and 18-28 remain in the application. Examination of the application as amended is respectfully requested.

### *Brief Discussion of New Claims*

New Claim 25 relates to a method of detecting at least one of electromagnetic radiation in the optical range and nuclear radiation and recites that the amount of radiation to which the microcantilever is exposed is unknown. New Claim 26 depends from Claim 25 and limits the changes which are monitored to the group consisting of a bending of the microcantilever, a shift in resonance frequency of the microcantilever, and a combination thereof. New Claim 27 relates to an apparatus for detecting at least one of electromagnetic radiation in the optical range and nuclear radiation and recites a plurality of radiation sensors arranged in a two-dimensional matrix. And new Claim 28 is dependent from Claim 27 and limits the means for monitoring radiation-induced changes to a means which monitors changes selected from the group consisting of a bending of the microcantilever, a shift in resonance frequency of the microcantilever, and a combination thereof. Support for these claims is found in the specification as originally filed, and no new matter is added.

### *Brief Discussion of Amendments to Existing Claims*

Claims 2-16 and 18-24 have all been amended to correct dependency. Claims 2-16, formerly dependent from now-cancelled Claim 1, are now dependent from Claim 25. Claims 18-24, formerly dependent from now-cancelled Claim 17, are now dependent from Claim 27.

*Arguments Regarding Patentability of Claims*

In the prior prosecution of the present application, the primary reference relied upon by the Examiner was *Photothermal Spectroscopy with Femtojoule Sensitivity Using a Micromechanical Device*, Barnes *et al.*, NATURE, Vol. 372, November 3, 1994 (hereinafter "Barnes *et al.*") This reference discloses a method and apparatus for measuring the photothermal heating of a material being tested and for providing an absorption spectrum of the material.

A fundamental requirement of the method and apparatus of Barnes *et al.* is that the amount of light which is directed onto the microcantilever must be known. The sensor of Barnes *et al.* cannot be calibrated without the amount of light being known, and the amount of heat absorbed by the material being tested cannot be determined without the amount of light being known. See, for example, the caption of FIG. 2 of Barnes *et al.*, where the absorption of the material being tested is expressed in terms of nanowatts per nanowatt ( $\text{nW nW}^{-1}$ ). If the amount of light being directed onto the material being tested were not known, this ratio could not be determined.

The present invention works on an entirely different principle. Rather than being concerned about the photothermal spectrum of a material being tested, as is the case in Barnes *et al.*, the present invention is concerned only with detecting radiation. The amount of light being directed onto the microcantilever of the present invention is not known and, in fact, is irrelevant. What is relevant in the present invention is only that radiation is detected or is not detected, or that there is a change in the amount of radiation being detected.

Stated differently, if one were to try to practice the method and apparatus of Barnes *et al.* by exposing the sensor to an unknown amount of light, as is recited in Claim 1, the experiment would completely fail. One would not be able to ascertain an

absorption spectrum of the material being tested, which is the clear and unequivocal objective of Barnes *et al.* The Barnes *et al.* reference clearly does not anticipate Claim 1. Further, since modifying the method and apparatus of Barnes *et al.* by exposing the sensor to an unknown amount of light would render it inoperative for its intended purpose of measuring the absorption spectrum of the material being tested, there would be no motivation to modify Barnes *et al.* in the suggested manner. Claim 1 and claims dependent therefrom are therefore patentable over Barnes *et al.*, either alone or in combination with any of the other references thus far cited by the Examiner.

Claim 17 now recites a plurality of sensors arranged in a two-dimensional matrix. The purpose of arranging a plurality of sensors in a two-dimensional matrix is to provide imaging capability, that is, by identifying areas of a field of view which contain electromagnetic radiation, and to identify areas of greater or lesser radiation (*i.e.*, contrast). Barnes *et al.* does not relate in any way to imaging capability, does not recognize or appreciate the possibility of imaging capability, and does not disclose a plurality of microcantilevers, much less a plurality of microcantilevers arranged in a two-dimensional matrix. Further, since the singular stated objective of Barnes *et al.* is to measure the absorption spectrum of a material being tested, there would be no motivation to modify the method and apparatus of Barnes *et al.* by providing a plurality of microcantilevers, since the information obtained from all microcantilevers beyond the first would simply be redundant. Absent any teaching or suggestion in the prior art for why one would want to provide a plurality of microcantilevers for testing the absorption spectrum of a material being tested, much less to arrange them in a two-dimensional matrix, it would not have been obvious to modify the method and apparatus of Barnes *et al.* by providing additional microcantilevers and by arranging the

microcantilevers in a two-dimensional matrix. Claim 17 and claims dependent therefrom are therefore believed allowable over Barnes *et al.*, either alone or in combination with any of the other prior art references thus far cited by the Examiner.

For the reasons hereinabove set forth, the claims are believed to be in condition for allowance. Continued examination of the application is requested, and allowance of the claims at an early date is courteously solicited.

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